

# Welcome to In Focus



29 September 2017

## The Fed model updated

*"My wealth has come from a combination of living in America, some lucky genes, and compound interest." Warren Buffett*

### Bye-bye Fed model

In the past, a positive relationship could be observed in the US between the average earnings yield (earnings/price) of the S&P 500 index and government bond yields. This relationship has become popular as the 'Fed model' and states in its strongest form that equities are fairly valued when there is equality between the one-year forward looking earnings yield and the 10-year government bond yield. That implies that once yields rise, equity valuations like PE ratios (the inverse of earnings yield), suffer.

The Fed model seems to be simple common sense. First, stocks and bonds are competing asset classes for investors. When stocks 'yield' more than bonds, stocks are perceived to be the better choice for investors and vice versa. Second, the government bond yield can be seen as a proxy for the risk-free rate. In the event that the risk-free rate rises, the present value of equity falls and vice versa.

Unfortunately, there is no sound theoretical foundation to explain the relationship<sup>1</sup>. That is hardly surprising – why would investors value equities without any reference to an equity risk premium? In regards to the first argument, the earnings yield of a stock is not a good proxy for its expected return, and is therefore not a sound comparison against the bond yield. The second argument only holds if we consider the impact of rising yields in isolation, all else being equal. In reality, rising rates are often accompanied by offsetting factors that actually bode well for equities, and we'll expound on that more later in the article.

### Welcome Capital Structure Substitution Theory

The Capital Structure Substitution Theory<sup>2</sup> (CSST) re-specifies the Fed model, and by doing so, puts it on a solid theoretical foundation. It suggests that company supply, rather than investor demand, drives the relationship between the earnings yield and

For EMEA and Asia distribution only

Inside ([click](#) to jump to sections)

[Bye-bye Fed model](#) In the past, a positive relationship could be observed in the US between the average earnings yield of the S&P 500 index and government bond yields. This relationship has become popular as the "Fed model". Unfortunately, there is no sound theoretical foundation to explain the relationship.

[Welcome Capital Structure Substitution Theory](#) The Capital Structure Substitution Theory (CSST) re-specifies the Fed model, and by doing so, puts it on a solid theoretical foundation

[GDP growth and equities](#) There is a strong argument for bond yields and nominal GDP growth to trend roughly in line

[Investment conclusion](#) Modest yield rises can be overall positive for equities – something the historical data pays testament to. Only once yields rise very decisively, valuations will eventually be negatively affected

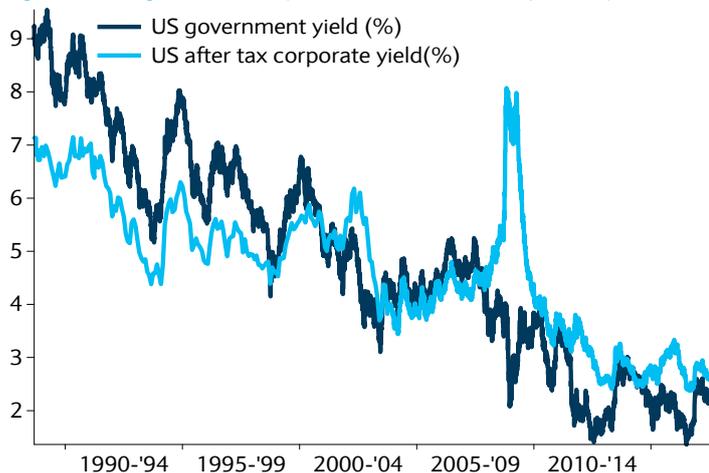
[Market calls – summary](#)

[Selected risks to our views](#)

[Asset class summary](#)

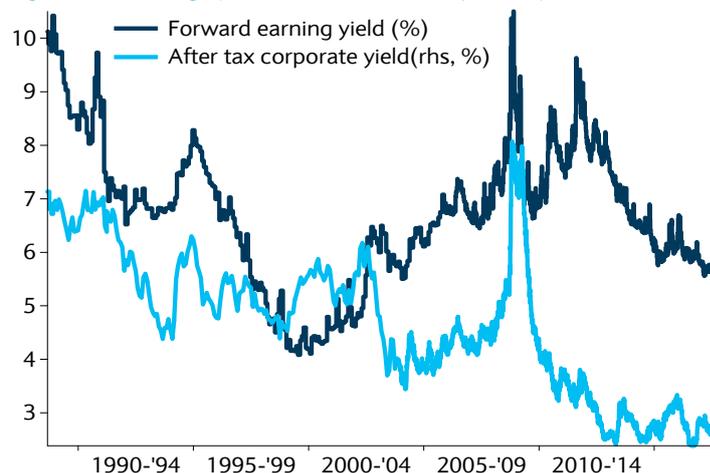
[The case for investing](#)

Figure 1: US government yield and after tax corporate yield



Source: Datastream, Barclays

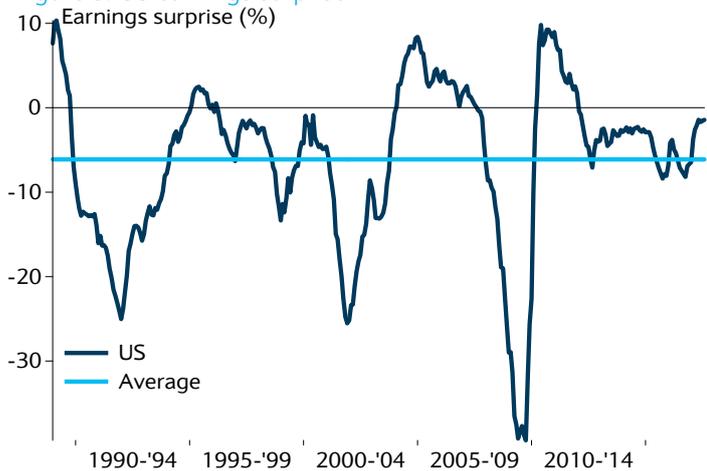
Figure 2: Earnings yield and after tax corporate yield



Source: Datastream, Barclays

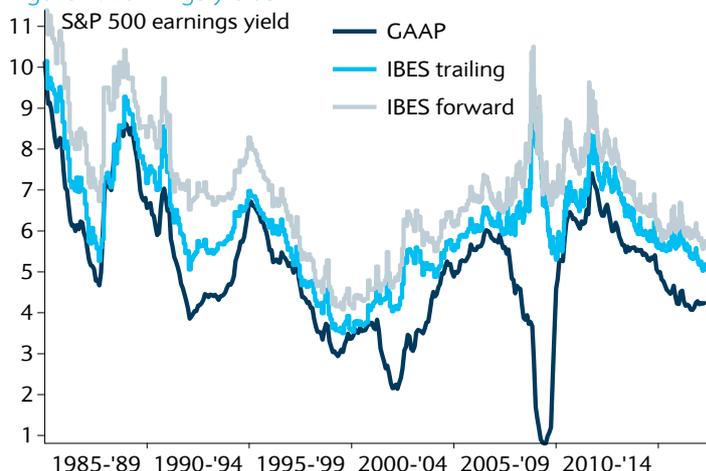
1. *Fight the Fed Model*, Clifford Asness  
2. *Understanding the Fed Model, Capital Structure, and then Some*, Jan H. Timmer

Figure 3: US earnings surprise



Source: Datastream, Barclays

Figure 4: Earnings yields



Source: Datastream, Barclays

For now, there has been little difference between the US government and after-tax corporate cost of debt, except for the Great Financial Crisis

interest rates. By adjusting the company's capital structure (mix of equity and bonds) to maximise earnings per share, company management eventually brings the earnings yield towards an equilibrium, where it should equal the after-tax cost of debt. This, of course, relies on the assumption that firms can freely repurchase their own shares and substitute them with debt – something that firms have appeared reluctant to do until certain regulatory changes in the 1980s.

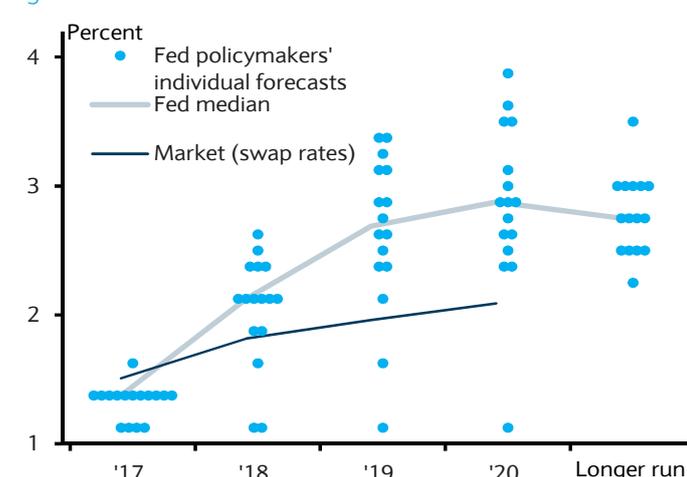
So how does CSST compare to the Fed model? For now, there has been little difference between the US government and after-tax corporate cost of debt, except for the Great Financial Crisis (Figure 1). From a track record perspective, Figure 2 reveals that historically, there has actually been, on average, a 2% gap between the two yields. In the context of analysts being far too optimistic regarding their earnings forecasts most of the time (Figure 3), that is hardly surprising. After all, why should company management optimise their capital structure based on systematically over-optimistic earning forecasts? The 2% gap vanishes however when we replace the forward earnings yield with a trailing earnings yield (Figure 4).

Recently the gap between the yields has widened to ~3%. In the presence of transaction costs, companies may be holding off on trades that drive yields towards equilibrium, anticipating future market movements instead. This effectively presents the stock market with a 'cushion' before increases in bond yields start eating into valuations. As the median Fed forecast for the longer run funds rate is only 3% (Figure 5), the cushion is sufficiently large enough that higher bond yields (or at least yields that are high enough to a plausible extent) do not need to be negative for equity valuations.

### GDP growth and equities

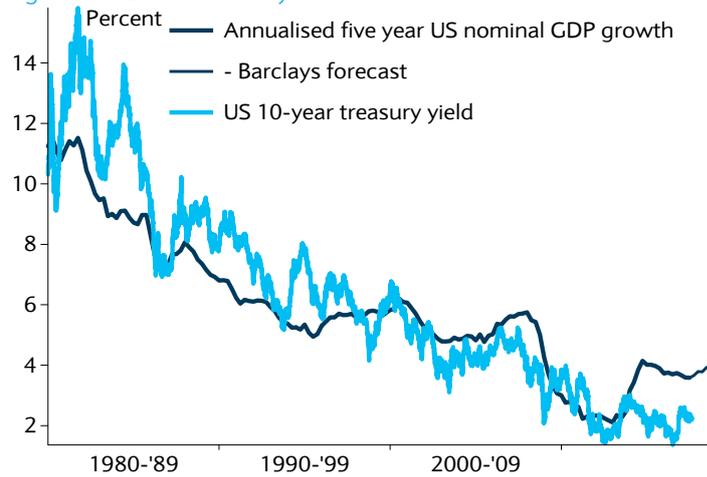
Based on the two ideas that in an efficient society, where the public sector needs to compete for capital, the growth rate of the public sector should be roughly in line with overall economic growth and that providers of capital should receive their fair share, there is a strong argument for bond yields and nominal GDP growth to trend roughly in

Figure 5: Forward rates estimates



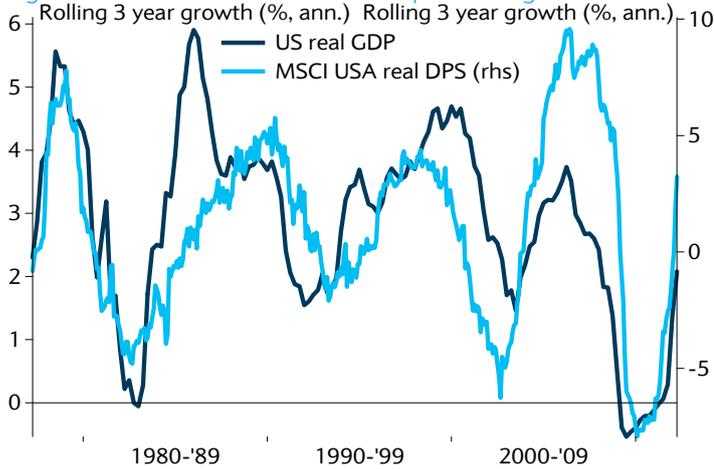
Source: Datastream, Barclays

Figure 6: GDP and bond yields



Source: Datastream, Barclays

Figure 7: US GDP and real dividends per share growth



Source: Datastream, Barclays

Figure 8: US GDP and forward earnings growth



Source: Datastream, Barclays

line (Figure 6). Thus normally higher bond yields go along with higher GDP growth. What does that imply for equities? Growth of equity earnings per share and dividends per share is positively related to GDP growth (Figure 7) and forward earnings growth as well (Figure 8). This implies that higher GDP growth potentially leads to rising dividend yield and forward earnings, which serves as a positive bulwark against the negative valuation impact from higher bond yields.

### Investment conclusion

Whilst the Fed model and CSST imply that higher bond yields will eventually be negative for forward PE ratios, there currently exists a comfortable cushion that should mitigate the effect of anticipated yield rises. This is further offset by the positive effects from rising earnings that tend to accompany interest rate rises, since central bankers would only raise rates if the wider economy and corporate backdrop is robust enough to handle them. This leaves us to conclude that modest yield rises can be positive for equities overall – something the historical data pays testament to<sup>3</sup>. Only once yields rise very decisively, valuations will eventually be negatively affected. That is however not our main scenario – at the moment markets are not even pricing in the median Fed forecast (Figure 5). Our base case remains that US yields rise modestly over the coming years – a pace that shouldn't be threatening to medium-term equity returns.

Modest yield rises can be positive for equities overall

*Christian Theis*

Christian Theis  
Investment Strategist  
[christian.theis@barclays.com](mailto:christian.theis@barclays.com)

3. In Focus – Fighting the Fed (24 March 2017)

This document has been prepared by the wealth and investment management division of Barclays Bank plc (“Barclays”), for information purposes only. Barclays does not guarantee the accuracy or completeness of information which is contained in this document and which is stated to have been obtained from or is based upon trade and statistical services or other third party sources. Any data on past performance, modelling or back-testing contained herein is no indication as to future performance. No representation is made as to the reasonableness of the assumptions made within or the accuracy or completeness of any modelling or back-testing. All opinions and estimates are given as of the date hereof and are subject to change. The value of any investment may fluctuate as a result of market changes. The information in this document is not intended to predict actual results and no assurances are given with respect thereto.

The information contained herein is intended for general circulation. It does not take into account the specific investment objectives, financial situation or particular needs of any particular person. The investments discussed in this publication may not be suitable for all investors. Advice should be sought from a financial adviser regarding the suitability of the investment products mentioned herein, taking into account your specific objectives, financial situation and particular needs before you make any commitment to purchase any such investment products. Barclays and its affiliates do not provide tax advice and nothing herein should be construed as such. Accordingly, you should seek advice based on your particular circumstances from an independent tax advisor. Neither Barclays, nor any affiliate, nor any of their respective officers, directors, partners, or employees accepts any liability whatsoever for any direct or consequential loss arising from any use of or reliance upon this publication or its contents, or for any omission. Past performance does not guarantee or predict future performance. The information herein is not intended to predict actual results, which may differ substantially from those reflected.

The products mentioned in this document may not be eligible for sale in some states or countries, nor suitable for all types of investors. This document shall not constitute an underwriting commitment, an offer of financing, an offer to sell, or the solicitation of an offer to buy any securities described herein, which shall be subject to Barclays’ internal approvals. No transaction or services related thereto is contemplated without Barclays’ subsequent formal agreement. Unless expressly stated, products mentioned herein are not guaranteed by Barclays Bank plc or its affiliates or any government entity.

This document is not directed to, nor intended for distribution or use by, any person or entity in any jurisdiction or country where the publication or availability of this document or such distribution or use would be contrary to local law or regulation, including, for the avoidance of doubt, the United States of America. It may not be reproduced or disclosed (in whole or in part) to any other person without prior written permission. You should not take notice of this document if you know that your access would contravene applicable local, national or international laws. The contents of this publication have not been reviewed or approved by any regulatory authority.

Barclays Capital Inc., Member SIPC, Barclays Bank plc and / or their affiliated companies and/or the individuals associated therewith (in various capacities) may already have or intend to: (i) seek investment banking or other business relationships for which they already receive or will receive compensation from the companies that are the subject of this publication (“Researched Companies”), such as underwriting, advising, and lending – as such, it is possible that Barclays Capital Inc., Barclays Bank plc or their affiliated companies may have managed or co-managed a public offering of securities for any issuer mentioned in this document within the last three years.; (ii) have an interest in the Researched Companies by acting making a market or dealing as principal in securities issued by Researched Companies or in options or other derivatives based thereon, or otherwise hold personal interests in the Research Companies; (iii) appoint employees or associates as directors or officers of the Researched Companies; (iv) act upon the contents of this publication prior to your having received it; (v) effect transactions which are not consistent with the recommendations given herein.

Barclays offers wealth and investment management products and services to its clients through Barclays Bank PLC and its subsidiary companies. Barclays Bank PLC is registered in England and authorised by the Prudential Regulation Authority and regulated by the Financial Conduct Authority and the Prudential Regulation Authority. Registered No. 1026167. Registered Office: 1 Churchill Place, London E14 5HP.

**Cyprus** – Barclays offers banking, wealth and investment management products and services to its clients through Barclays Bank PLC and its subsidiaries. Barclays Bank PLC is registered in England and authorised by the Prudential Regulation Authority and regulated by the Financial Conduct Authority and the Prudential Regulation Authority. Registered No. 1026167. Registered Office: 1 Churchill Place, London E14 5HP. Barclays Bank PLC is regulated by the Central Bank of Cyprus in the conduct of its banking and investment business in Cyprus. **France** – Barclays Bank PLC, Succursale en France - Principal établissement : 32 avenue George V - 75008 Paris - RCS Paris B 381 066 281 - C.C.P. 62-07 Paris - Siège social à Londres E14 5HP, Angleterre, 1, Churchill Place - Reg N° 1026167 - Capital autorisé 3 040 001 000 de Livres Sterling. BARCLAYS BANK PLC est un établissement de crédit, intermédiaire en assurance (l'immatriculation auprès du FCA peut être contrôlée sur le site internet [www.orias.fr](http://www.orias.fr)), prestataire de service d'investissement de droit anglais agréé par the Financial Conduct Authority (FCA), autorité de tutelle britannique qui a son siège social 25 The North Colonnade, Canary Wharf, Londres E14 5HS. ([www.fca.org.uk](http://www.fca.org.uk)), FCA register n° 122702 La Succursale française de Barclays Bank PLC, est autorisée par le FCA à recourir à un Agent lié, Barclays Patrimoine SCS. **Gibraltar** – Barclays offers banking, wealth and investment management products and services to its clients through Barclays Bank PLC and its subsidiaries. Barclays Bank PLC is registered in England and authorised by the Prudential Regulation Authority and regulated by the Financial Conduct Authority and the Prudential Regulation Authority. Registered No. 1026167. Registered Office: 1 Churchill Place, London E14 5HP. Barclays Bank PLC is authorised by the Gibraltar Financial Services Commission to conduct banking and investment business in Gibraltar. **Guernsey** – Barclays offers wealth and investment products and services to its clients through Barclays Bank PLC and its subsidiary companies. Barclays Bank PLC is registered in England and authorised by the Prudential Regulation Authority and regulated by the Financial Conduct Authority and the Prudential Regulation Authority. Registered Number: 1026167. Registered Office: 1 Churchill Place, London E14 5HP. Barclays Bank PLC, Guernsey Branch is licensed by the Guernsey Financial Services Commission under the Banking Supervision (Bailiwick of Guernsey) Law 1994, as amended, and the Protection of Investors (Bailiwick of Guernsey) Law 1987, as amended. Barclays Bank PLC, Guernsey Branch has its principal place of business at Le Marchant House, St Peter Port, Guernsey, GY1 3BE. **Ireland** – Barclays Bank Ireland PLC is regulated by the Central Bank of Ireland. Registered in Ireland. Registered Number: 396330. Registered Office: Two Park Place, Hatch Street, Dublin 2. Calls may be recorded for security and other purposes. Barclays Bank PLC is registered in England and authorised by the Prudential Regulation Authority and regulated by the Financial Conduct Authority and the Prudential Regulation Authority. Registered No. 1026167. Registered Office: 1 Churchill Place, London E14 5HP. **Isle of Man** – Barclays offers wealth and investment products and services to its clients through Barclays Bank PLC and its subsidiary companies. Barclays Bank PLC is registered in England and authorised by the Prudential Regulation Authority and regulated by the Financial Conduct Authority and the Prudential Regulation Authority. Registered Number: 1026167. Registered Office: 1 Churchill Place, London E14 5HP. Barclays Bank PLC, Isle of Man Branch is licensed by the Isle of Man Financial Services Authority. Barclays Bank PLC, Isle of Man Branch has its principal business address in the Isle of Man at Barclays House, Victoria Street, Douglas, Isle of Man, IM99 1AJ. **Italy** – Barclays offers wealth and investment management products and services to its clients through Barclays Bank PLC and its subsidiary companies. Barclays Bank PLC is registered in England and authorised by the Prudential

Regulation Authority and regulated by the Financial Conduct Authority and the Prudential Regulation Authority. Registered No. 1026167. Registered Office: 1 Churchill Place, London E14 5HP. Barclays Bank PLC – Via della Moscova. 18 – 20121 Milan – Italy, is a branch of Barclays Bank PLC and is registered with the Register of Banks Milan n° 4862. Company Register Milan n° 80123490155 – R.E.A. Milan 1040254 – Fiscal Code n° 80123490155 – Registered VAT n° 04826660153. **Jersey** – Barclays offers wealth and investment products and services to its clients through Barclays Bank PLC and its subsidiary companies. Barclays Bank PLC is registered in England and authorised by the Prudential Regulation Authority and regulated by the Financial Conduct Authority and the Prudential Regulation Authority. Registered Number: 1026167. Registered Office: 1 Churchill Place, London E14 5HP. Barclays Bank PLC, Jersey Branch is regulated by the Jersey Financial Services Commission. Barclays Bank PLC, Jersey Branch is regulated by the Guernsey Financial Services Commission under the Protection of Investors (Bailiwick of Guernsey) Law 1987 as amended. Barclays Bank PLC. Jersey Branch has its principal business address in Jersey at 13 Library Place, St Helier, Jersey JE4 8NE, Channel Islands. **Monaco** – Barclays Bank PLC – Monaco is a branch of Barclays Bank PLC with its offices in the Principality of Monaco at 31 Avenue de la Costa, MC 98000 Monaco – Tel. +377 93 15 35 35. Registered with the Monaco Chamber of Commerce and Industry under No° 68 S 01191. Registered VAT No° FR 40 00002674 9. **Nigeria** – Barclays offers wealth and investment management products and services to its clients through Barclays Bank PLC and its subsidiaries. Barclays Bank PLC is registered in England and authorised by the Prudential Regulation Authority and regulated by the Financial Conduct Authority and the Prudential Regulation Authority. Registered No. 1026167. Registered Office: 1 Churchill Place, London E14 5HP. Barclays Group Representative Office (NIG) Ltd. Registered Company No: RC41757 and its mailing address is Barclays Group Representative Office (NIG) Ltd, Courier Department, 3rd Floor, 1 Churchill Place, London, E14 5HP. **Portugal** – Barclays offers wealth and investment management products and services to its clients through Barclays Bank PLC and its subsidiary companies. Barclays Bank PLC is registered in England and authorised by the Prudential Regulation Authority and regulated by the Financial Conduct Authority and the Prudential Regulation Authority. Registered No. 1026167. Registered Office: 1 Churchill Place, London E14 5HP. Barclays Bank PLC activity in Portugal is supervised by Banco de Portugal (BoP) and Comissão de Mercado de Valores Mobiliários (CMVM). **Qatar** – Barclays offers wealth and investment management products and services to its clients through Barclays Bank PLC and its subsidiary companies. Barclays Bank PLC is registered in England and is authorised by the Prudential Regulation Authority and regulated by the Financial Conduct Authority and the Prudential Regulation Authority. Registered No. 1026167. Registered Office: 1 Churchill Place, London E14 5HP. Barclays Bank PLC in the Qatar Financial Centre (Registered No. 00018) is authorised by the Qatar Financial Centre Regulatory Authority. Barclays Bank PLC QFC Branch may only undertake the regulated activities that fall within the scope of its existing QFCRA authorisation. Principal place of business in Qatar: Qatar Financial Centre, Office 1002, 10th Floor, QFC Tower, Diplomatic Area, West Bay, PO Box 15891, Doha, Qatar. This information has been distributed by Barclays Bank PLC. Related financial products or services are only available to Business Customers as defined by the QFCRA. **Switzerland** – Barclays Bank (Suisse) SA is a Bank registered in Switzerland and regulated and supervised by FINMA. Registered No. CH-660.0.118.986-6. Registered Office: Chemin de Grange-Canal 18-20, P.O. Box 3941, 1211 Geneva 3, Switzerland. Registered branch: Beethovenstrasse 19, P.O. Box, 8027 Zurich. Registered VAT No. CHE-106.002.386. Barclays Bank (Suisse) SA is a subsidiary of Barclays Bank PLC registered in England, authorised by the Prudential Regulation Authority and regulated by the Financial Conduct Authority and the Prudential Regulation Authority. It is registered under No. 1026167 and its registered office is 1 Churchill Place, London E14 5HP. **United Arab Emirates (Dubai)** – Barclays offers wealth and investment management products and services to its clients through Barclays Bank PLC and its subsidiary companies. Barclays Bank PLC is registered in England and authorised by the Prudential Regulation Authority and regulated by the Financial Conduct Authority and the Prudential Regulation Authority. Registered No. 1026167. Registered Office: 1 Churchill Place, London E14 5HP. Barclays Bank PLC (DIFC Branch) (Registered No. 0060) is regulated by the Dubai Financial Services Authority. Barclays Bank PLC (DIFC Branch) may only undertake the financial services activities that fall within the scope of its existing DFSA licence. Related financial products or services are only available to Professional Clients as defined by the DFSA. Principal place of business in the DIFC: Dubai International Financial Centre, The Gate Village Building No. 10, Level 6, PO Box 506674, Dubai, U.A.E.